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Seismic facies analysis of the carboniferous reservoir. Case study from the Tatarstan, Russia

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© SGEM2018. This paper describes application of the seismic facies analysis method to identify prospective deposits in the carbonate sediments of the Republic of Tatarstan The Republic of Tatarstan is one of the main oil producing regions of Russia, which is one of the main global oil producers. Annually it produces about 26 million tons of oil. The main oil reserves were discovered in 1950-1980. To keep production on the high-level geoscientists apply new technologies, such as seismic facies analysis. Tatarstan succession consists of Devonian, Carboniferous and Permian strata. The main goal of the authors was to analyze facies distribution in the carbonate rocks of Carboneferous age in one of the Tatarstan oilfields. As part of this work the core data and well logs were studied at the investigated area. Then, 2D seismic section were interpreted, the boundaries of the main stratigraphic units (Sargayevo unit, Mendym unit, Upper Frasnian sub-stage, Zadonian unit, Dankov unit, Zavolga unit, Tournaisian stage, Tula unit, Bashkirian stage, Verey unit) were traced. Seismic facies were analyzed using the paleogeomorphological analysis and seismic attributes of Chaos and Dip. As a result of this work, the following types of facies were identified: shelf lagoon, organic build-up, foreslope and deep shelf margin facies. Creating sections with the distinguished seismic facies led to identification of the prospective areas for further drilling.

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Keywords

Paleogeomorphological analysis, Seismic attributes, Seismic facies analysis

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